RE: Epidemic Influenza and Vitamin D

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JOHN F. ALOIA and MELISSA LI-NG

THESE AUTHORS NOTE:

"The occurrence of the common cold and influenza shows clear seasonality. The cold and influenza season corresponds to the season of vitamin D insufficiency."

"The lack of vitamin D during the winter may be a 'seasonal stimulus' to the infectivity of the influenza virus."

"Vitamin D is produced in the skin when sunlight is absorbed. Thus, vitamin D levels, or serum 25-hydroxyvitamin D (25-OHD), fluctuate seasonally."

Vitamin D has important functions in the immune system, specifically the innate immune system.

These authors conducted a 3-year randomized controlled trial to test the hypothesis that vitamin D3 supplementation would prevent bone loss in post-menopausal African-American women.

A total of 208 women were randomized to receive 800 IU of vitamin D3 (n=104) or placebo (n=104). After 2 years, the vitamin D3 dose was increased to 2000 IU in the active group.

RESULTS

After 3 years, a total of 34 patients reported cold and influenza symptoms, 8 in the vitamin D3 group vs. 26 in the placebo group.

Only one subject had a cold/influenza while on 2,000 IU of vitamin D.

"Vitamin D supplementation, particularly at higher doses, may protect against the 'typical' winter cold and influenza."

"The physiological basis of the protective effect of vitamin D lies in its ability to stimulate innate immunity and to moderate inflammation. The active form of vitamin D, 1,25-dihydroxyvitamin D stimulates the genetic expression of antimicrobial peptides in human monocytes, neutrophils, and epithelial cells."

"These reports provide a rationale for vitamin D supplementation in the prevention of colds and influenza."

"Since there is an epidemic of vitamin D insufficiency in the United States, the public health impact of this observation could be great."

Only one subject had cold/influenza symptoms while taking high doses (2,000 IU / day) of vitamin D.

The original authors note, in reply [John J Cannell, Michael Zasloff, Cedric F Garland, Robert Scragg and Edward Giovannucci; On the Epidemiology of Influenza; Virology Journal; February 25, 2008]:

Clinical trials using vitamin D "should use cholecalciferol [D3], not ergocalciferol [D2]. Ergocalciferol [D2] is not vitamin D but a less potent vitamin D analogue that plays no role in normal human physiology."

"Drs Aloia and Li-Ng's work make it reasonable to believe that physiological doses [800 – 2,000 IU / day] of vitamin D prevent many viral respiratory infections."

"It is also reasonable to postulate that pharmacological doses of vitamin D may be effective adjuvants in a breathtakingly large number of life-threatening infections."

KEY POINTS FROM DAN MURPHY

1) "There is an epidemic of vitamin D insufficiency in the United States, the public health impact of this observation could be great."

2) "The occurrence of the common cold and influenza shows clear seasonality. The cold and influenza season corresponds to the season of vitamin D insufficiency."

3) "The lack of vitamin D during the winter may be a 'seasonal stimulus' to the infectivity of the influenza virus."

4) "Vitamin D is produced in the skin when sunlight is absorbed. Thus, vitamin D levels, or serum 25-hydroxyvitamin D (25-OHD), fluctuate seasonally."

5) Vitamin D has important functions in the immune system, specifically the innate immune system.

6) Over a 3-year period, taking 800 IU of vitamin D3 reduced the incidence of colds and flus by 70%. Taking 2,000 IU of vitamin D3 reduced the incidence of colds and flus to nearly zero (only one case out of 104 users).

7) "Vitamin D supplementation, particularly at higher doses, may protect against the 'typical' winter cold and influenza."

8) "The physiological basis of the protective effect of vitamin D lies in its ability to stimulate innate immunity and to moderate inflammation."

9) "These reports provide a rationale for vitamin D supplementation in the prevention of colds and influenza."

10) Only vitamin D3 is bioactive; vitamin D2 (ergocalciferol) "is not vitamin D but a less potent vitamin D analogue that plays no role in normal human physiology."

11) "Physiological doses [800 – 2,000 IU / day] of vitamin D prevent many viral respiratory infections."

12) "It is also reasonable to postulate that pharmacological doses of vitamin D may be effective adjuvants in a breathtakingly large number of life-threatening infections."